ANNUAL REPORT FOR 2007

Crescent Road Mitigation Site
Lenoir County
TIP No. R-2719BA

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North Carolina Department of Transportation
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SUMMARY

The following report summarizes the monitoring activities that have occurred in 2007 at the Crescent Road Mitigation Site. The 2007-year concludes the fifth year of hydrology and vegetation monitoring following construction of the site. The site must be monitored for five consecutive years or until the site is deemed successful.

Site hydrology is monitored with three groundwater gauges, three surface water gauges, and one onsite rain gauge. All three of the groundwater gauges met the jurisdictional criteria for wetland hydrology (>12.5% of the growing season). All three surface water gauges showed periods of inundation during the 2007 monitoring year.

Three vegetation plots were established to monitor the trees planted in the 3.35-acre site. The 2007 vegetation monitoring of the site revealed an average tree density of 377 trees per acre. This average is well above the minimum success criteria of 260 trees per acre.

NCDOT proposes to discontinue hydrologic and vegetation monitoring at the Crescent Road Mitigation Site.

1.0 INTRODUCTION

1.1 Project Description

The Crescent Road Mitigation Site is situated adjacent to C.F. Harvey Road (Crescent Road) both to the north and south, in the western portion of Lenoir County (Figure 1). It is approximately 2 miles (3.2 kilometers) northwest of Kinston. The U.S. Army Corps of Engineers permit for R-2719BA dated June 12, 2001 states the onsite mitigation for Crescent Road needs to provide 0.58-acre of riverine restoration and 1,706 linear feet of stream restoration to offset unavoidable impacts. According to the as-built drawings of the site, the site actually restored 3.71-acres of riverine wetlands, 2,291 linear feet of stream restoration, and 7.6 acres of Neuse River riparian buffer. These additional credits may be used to offset future mitigation needs.

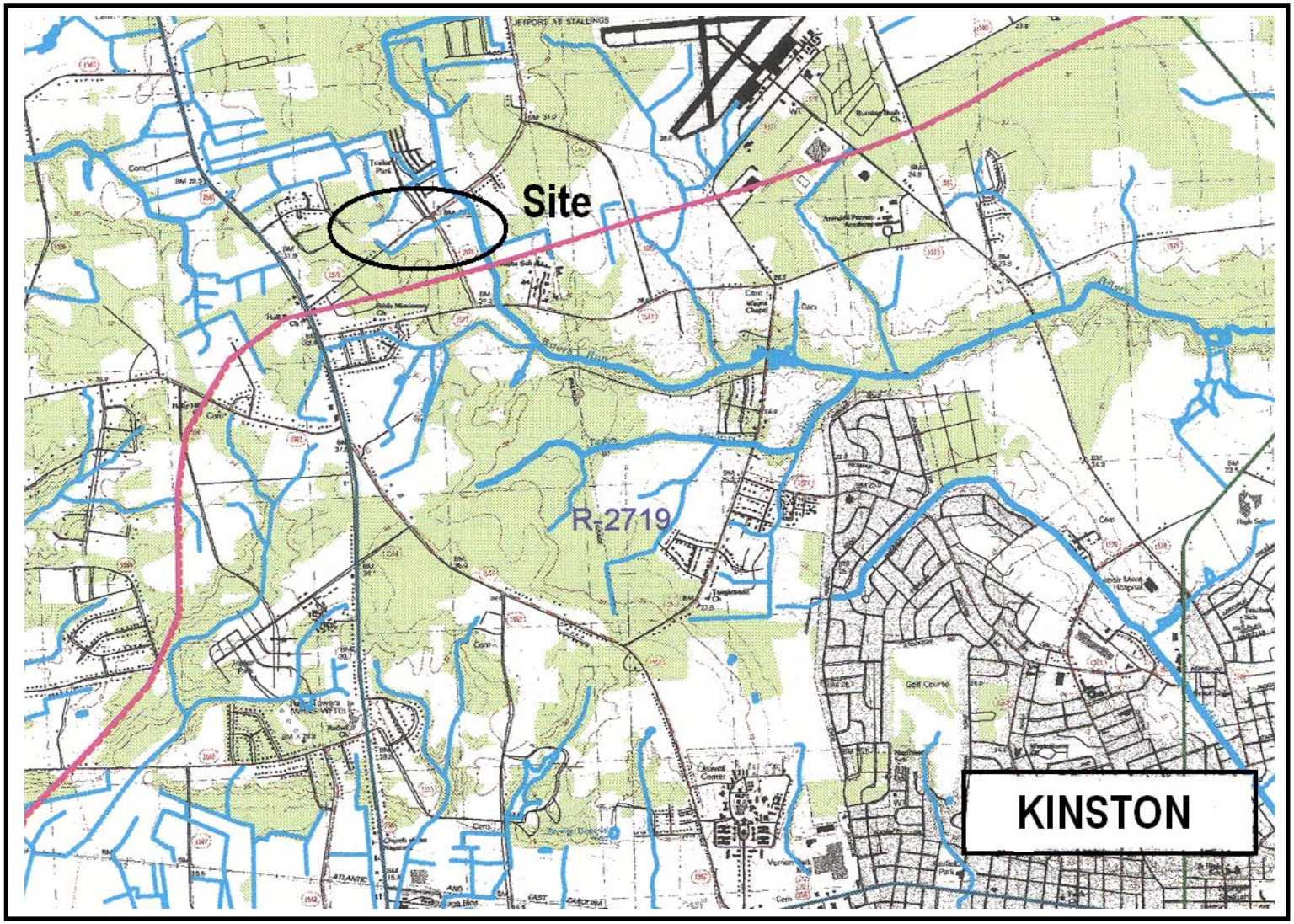
1.2 Purpose

In order to demonstrate successful mitigation, the site must be monitored for a minimum of five years or until success criteria are achieved. Success criteria are based on federal guidelines for wetland mitigation. Criteria for hydrologic conditions and vegetation survival are included in these documents. The following report describes the results of the hydrologic and vegetation monitoring during the 2007-growing season at the Crescent Road Mitigation Site.

1.3 Project History

Spring 2002	Site Construction
May 2002	Hydrologic Monitoring Gauges Installed
March 2002	Site Planted
May- November 2002	Hydrologic Monitoring (Incomplete Year)
March- November 2003	Hydrologic Monitoring (Year 1)
June 2003	Vegetation Monitoring (Year 1)
March- November 2004	Hydrologic Monitoring (Year 2)
August 2004	Vegetation Monitoring (Year 2)
March - November 2005	Hydrologic Monitoring (Year 3)
August 2005	Vegetation Monitoring (Year 3)
March - November 2006	Hydrologic Monitoring (Year 4)
June 2006	Vegetation Monitoring (Year 4)
March - November 2007	Hydrologic Monitoring (Year 5)
July 2007	Vegetation Monitoring (Year 5)

Figure 1. Site Location Map



2.0 HYDROLOGY

2.1 Success Criteria

In accordance with federal guidelines for wetland mitigation, the success criteria for hydrology state that the area must be inundated or saturated (within 12 inches of the surface) by surface or groundwater for at least a consecutive 12.5% of the growing season. Areas inundated less than 5% of the growing season are always classified as non-wetlands. Areas inundated between 5% and 12.5% of the growing season can be classified as wetlands depending upon factors such as the presence of hydrophytic vegetation and hydric soils.

According to the Soil Conservation Service, the growing season in Lenoir County extends from March 17 - November 15 (approximately 244 days). A consecutive 12.5% of the growing season for Crescent Road would equal 31 days; a consecutive 8% would be equivalent to 20 days. Local climate must represent average conditions for the area in order for the hydrologic data to be valid.

2.2 Hydrologic Description

Three groundwater and three surface water-monitoring gauges are used to record site hydrologic data. The groundwater gauges are set to record daily water levels, while the surface water gauges are set to record at 3-hour intervals. A rain gauge is also located on the site in order to get accurate site rainfall measurements. The hydrologic response (groundwater) to rainfall events is evaluated using this data.

Appendix A contains a plot of the water depth for each of the groundwater and surface water monitoring gauges for 2007. Precipitation events, measured by the onsite rain gauge, are included on each groundwater graph as bars.

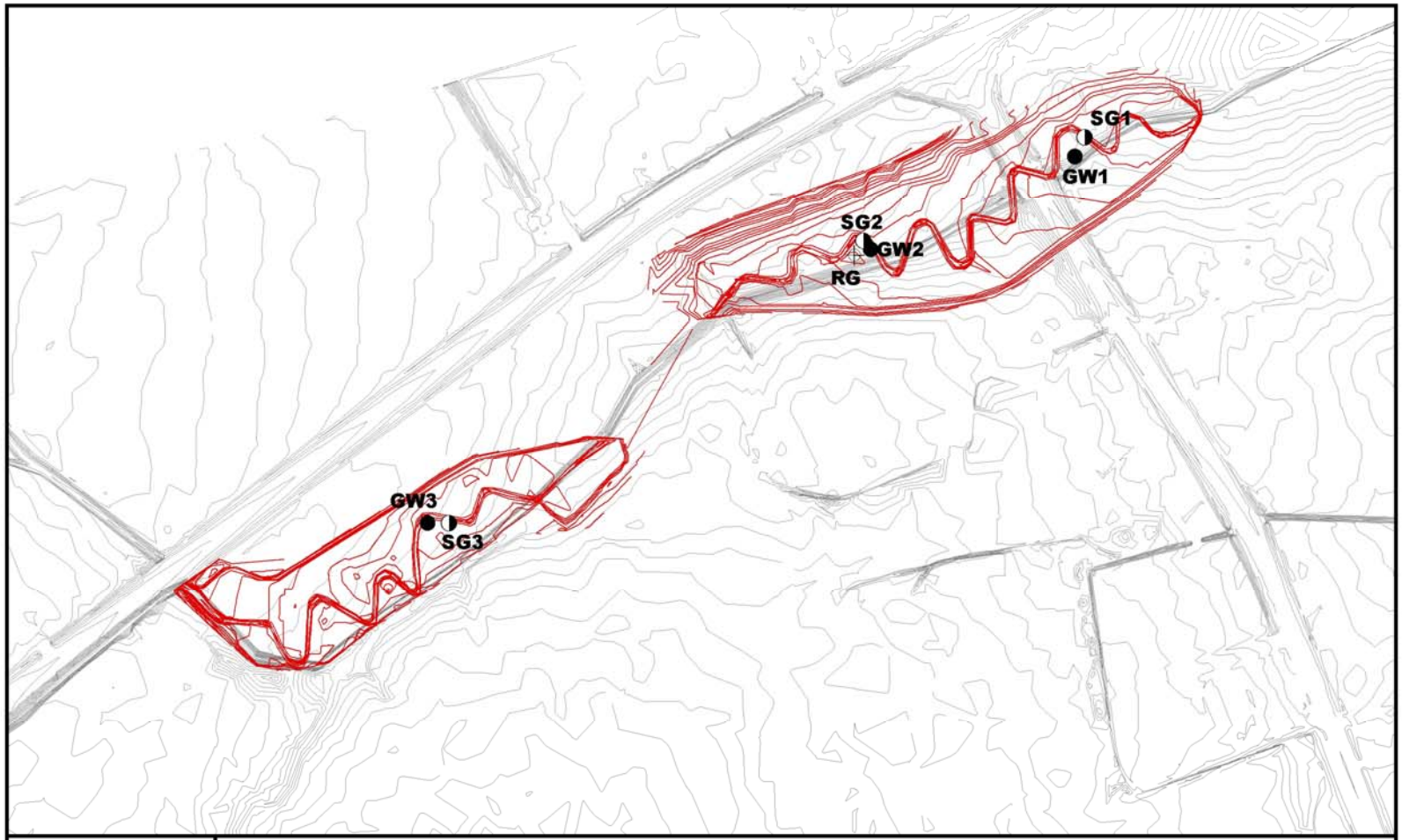


Figure 2. Gauge Location Map

- Groundwater Gauge
- Surface Gauge
- Rain Gauge

1:2,400
1 inch equals 200 feet
210 105 0 210
Feet

2.3 Results of Hydrologic Monitoring

2.3.1 Site Data

The total number of consecutive days that the groundwater was within twelve inches of the surface was determined for each groundwater-monitoring gauge. This number was converted into a percentage of the growing season. Table 1 presents the hydrologic results for 2007. Figure 3 is a graphical representation of the hydrologic monitoring results for 2007.

Table 1. 2007 Hydrologic Monitoring Results

Monitoring Gauge	< 5%	5-12.5%	>12.5%	Actual %	Dates of Success
CRGW-1			✕	41.0	May 23 – August 30
CRGW-2			✕	63.9	March 17-August 19
CRGW-3			✕	18.4	March 17 – April 30

Table 2. Hydrologic Monitoring Results (2003-2007)

Monitoring Gauge	2003 Results	2004 Results	2005 Results	2006 Results	2007 Results
CRGW-1	19.3	9.8	16.0	10.2	41.0
CRGW-2	9.4	20.1	17.6	52.0	63.9
CRGW-3	24.2	28.7	19.3	20.1	18.4
Climate Conditions	Average/ Above Average Rainfall	Average/ Above Average Rainfall	Average Rainfall	Average Rainfall	Below Average Rainfall

2.3.2 Climatic Data

Figure 4 is a comparison of monthly rainfall for the period of January through November 2007 to historical precipitation (collected between 1975 and 2007) for Kinston, North Carolina. This comparison gives an indication of how 2007 relates to historical data in terms of climate conditions. The NC State Climate Office provided all of the local rainfall information.

For the 2007-year, the months January, April, May, June and October experienced average rainfall. The months of February, March, July, August, September and November recorded below average rainfall for the site. Overall, 2007 experienced a below average rainfall year.

2.4 Conclusions

The 2007-year represents the fifth full growing season that hydrologic data has been collected on the Crescent Road Mitigation Site. All three of the groundwater-monitoring gauges met the jurisdictional criteria for wetland hydrology (>12.5% of the growing season). All three surface water gauges showed periods of inundation during the 2007 monitoring year.

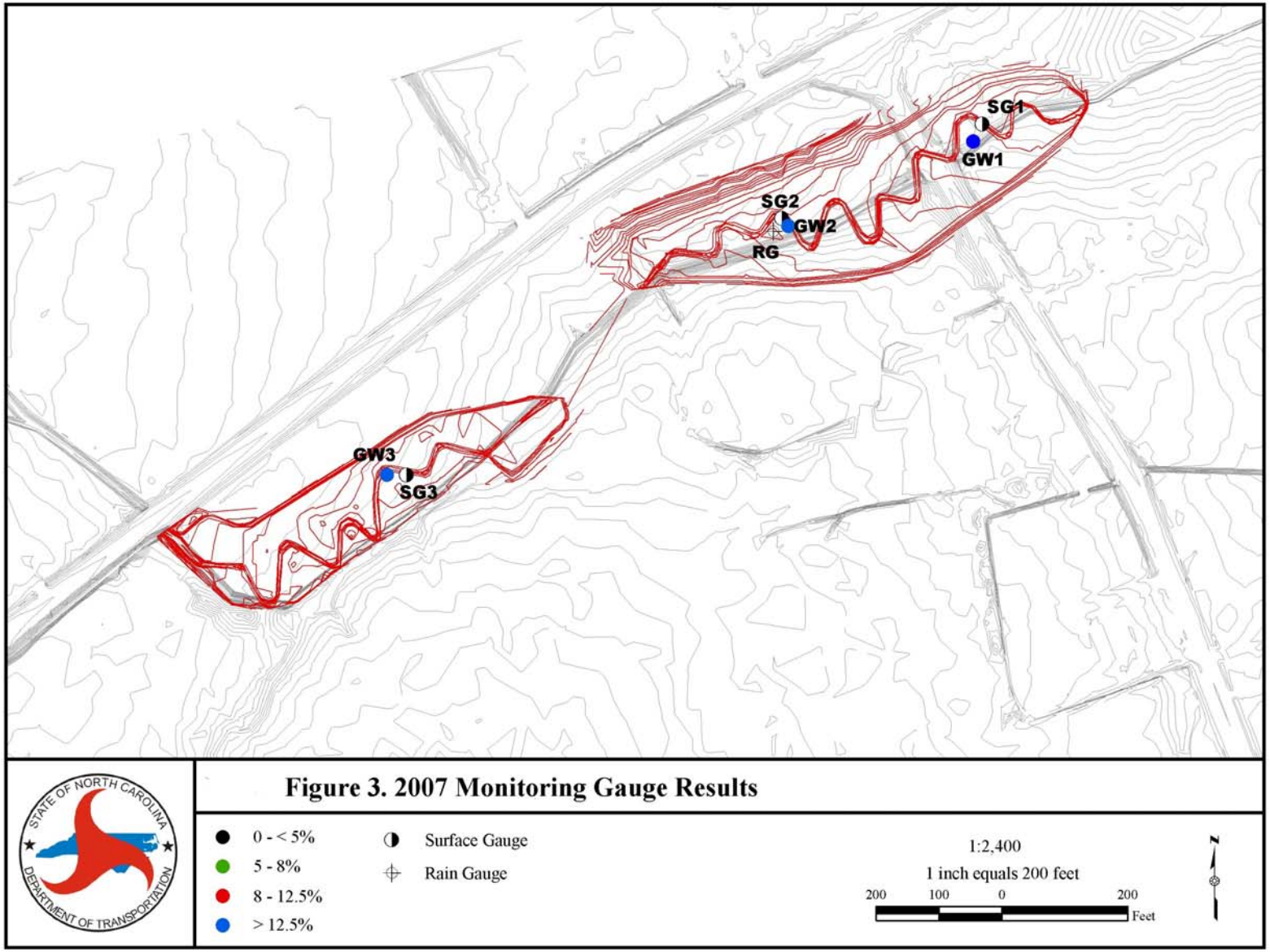
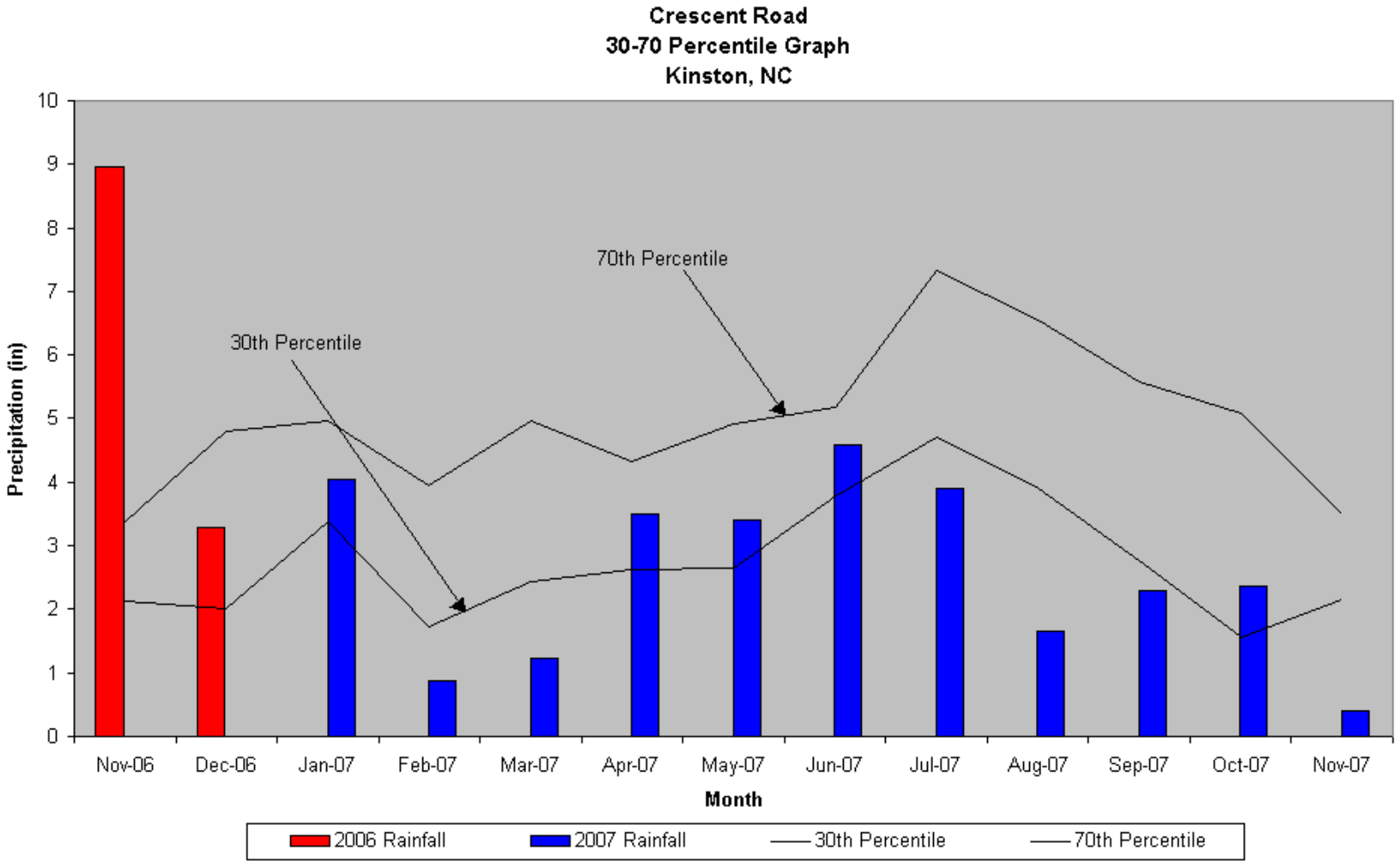


Figure 3. 2007 Monitoring Gauge Results

Figure 4. 30-70 Percentile Graph



3.0 VEGETATION: CRESCENT ROAD MITIGATION SITE (YEAR 5 MONITORING)

3.1 Success Criteria

Success Criteria states that at least 320 stems per acre must survive after the completion of the third growing season and 260 stems per acre after the fifth growing season. If desired vegetation has not been established, NCDOT will notify the appropriate agencies and will implement corrective measures.

3.2 Description of Species

The following tree species were planted in the Wetland Restoration Area:

Fraxinus pennsylvanica, Green Ash
Betula nigra, River Birch
Nyssa sylvatica var. *biflora*, Swamp Blackgum
Quercus phellos, Willow Oak

3.3 Results of Vegetation Monitoring

Table 3. Vegetation Monitoring Statistics

Plot #	Green Ash	River Birch	Swamp Blackgum	Willow Oak	Total (5 year)	Total (at planting)	Density (Trees/Acre
1	14	8		8	30	47	434
2	12	10		5	27	42	437
3	6	4		3	13	34	260
Average Density (Trees/Acre)							377

Site Notes:
Other species noted: woolgrass, *Juncus* sp., fennel, black willow, tag alder, cattails, silky dogwood, nutsedge, wax myrtle, lespedeza, sycamore, pine, *Baccharis* sp., red maple, and goldenrod.

3.4 Conclusions

There were 3 vegetation monitoring plots established throughout the 3.35 acre planting area. The 2007 vegetation monitoring of the site revealed an average tree density of 377 trees per acre. This average is well above the minimum success criteria of 260 trees per acre.

NCDOT proposes to discontinue vegetation monitoring at the Crescent Road Mitigation Site.

4.0 OVERALL CONCLUSIONS/RECOMMENDATIONS

The 2007-year represents the fifth full growing season that hydrologic and vegetation data has been collected on the Crescent Road Mitigation Site. Two of the three groundwater gauges met the jurisdictional criteria for wetland hydrology (>12.5% of the growing season), while one groundwater gauge met for 10.2% of the growing season. All three surface water gauges showed periods of inundation during the 2007 monitoring year.

The 2007 vegetation monitoring of the site revealed an average tree density of 377 trees per acre. This average is well above the minimum success criteria of 260 trees per acre.

NCDOT proposes to discontinue hydrologic and vegetation monitoring at the Crescent Road Mitigation Site.

APPENDIX A
GAUGE DATA GRAPHS

APPENDIX B

SITE PHOTOS AND PHOTO AND PLOT LOCATIONS MAP

Crescent Road

Photo 1

Photo 2

Photo 3

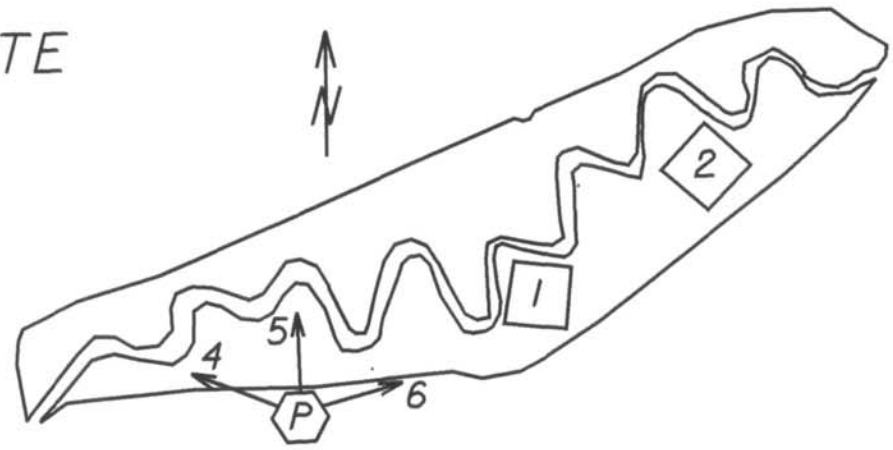
Photo 4

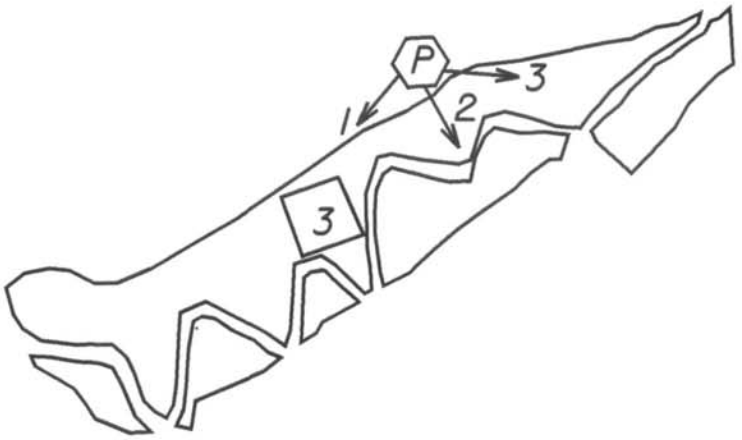
Photo 5

Photo 6

September 2007

CRESCENT ROAD MITIGATION SITE





P PHOTO LOCATIONS

PLOT LOCATIONS